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October 19, 2007

04-CC,Sol-680, 780-38.0/41.0, L0.0/R1.6 1.1/2.3
04-0060A4
ACIM-680-1(066)E
ACIM-780-2(351)E

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in CONTRA COSTA AND SOLANO COUNTIES IN MARTINEZ AND BENICIA ON ROUTE 680 FROM 1.0 KM SOUTH OF MOCOCO OVERHEAD TO BAYSHORE ROAD AND ON ROUTE 780 FROM ROUTE 680 TO EAST FIFTH STREET.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on October 31, 2007.

This addendum is being issued to revise the Project Plans, the Notice to Contractors and Special Provisions, the Proposal and Contract, the Federal Minimum Wages with Modification Numbers 13 and 15 dated 10-12-07, and provide a copy of the Information Handout.

Project Plan Sheets 1, 102, 103, 107, 116, 117, 118, 122, 317, 318, 319, 391, 394, 396, 397, 398, 399, 404, 413, 429, 430, 469, 471, 491, 497 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheets 465A, 465B, 465C, 465D, 465E, 513A, 513B are added. Half-sized copies of the added sheets are attached for addition to the project plans.

In the Special Provisions, Section 5-1.16, "PROJECT INFORMATION," in the second paragraph, item C, is added as follows:

"C. Geotechnical Design Report."

In the Special Provisions, Section 5-1.16, "PROJECT INFORMATION," the third paragraph is revised as follows:

"Information available for inspection at the District Office is as follows:

A. Supplemental Site Investigation Report, Benicia-Martinez Bridge, Marina Vista/Waterfront Road Interchange, Martinez, California, Geocon, June 2007.
B. California Department of Fish and Game agreement.
C. U.S. Fish and Wildlife Service agreement.
D. National Marine Fisheries Service agreement.

E. U.S. Army Corps of Engineers permit.
F. San Francisco Bay Conservation Development Commission permit.
G. U.S. Coast Guard checklist.
H. California Regional Water Quality Control Board permit.
I. Temporary Storm Water Run-on Bypass and Excavation Dewatering Information Package (Revised).
J. Site Survey Report, Asbestos and Deteriorated Lead Paint (Toll Plaza and Administration Building).
K. Site Investigation Report, Benicia-Martinez Bridge, Mococo Overhead, and Marina Vista/Waterfront Road Interchange, Martinez, California, Geocon, April 2002.
L. Site Investigation Report, Interstate 680/780 Interchange Project, Solano County, California, Geocon, March 2001."

In the Special Provisions, Section 5-1.16, "PROJECT INFORMATION," the sixth paragraph is revised as follows:

"Except for the existing Benicia-Martinez Toll Bridge (Bridge No. 28-0153) plans of the existing bridges may be requested by fax from the Office of Structure Maintenance and Investigations, 1801 30th Street, Sacramento, CA, Fax (916) 227-8357.

In the Special Provisions, Section 5-1.16, "PROJECT INFORMATION," the following paragraphs are added after the sixth paragraph:

"Plans of the existing Benicia-Martinez Bridge are available from the Duty Senior upon execution of a Confidentiality Agreement. The Confidentiality Agreement can be downloaded from the following website: www.dot.ca.gov/dist4/construction/contracts/04-0060A4/ConfidentialityAgreement.pdf

The executed Confidentiality Agreement along with a telephone number and an e-mail address must be faxed to the Duty Senior at (510) 622-1805. Upon receiving the Confidentiality Agreement, the Duty Senior will send the Bidder instructions on how to get copies of the Plans. The process from the time the Duty Senior receives the executed confidentiality Agreement and the time the Bidder receives the Plans could take 5 working days."

In the Special Provisions, Section 5-1.36, "STATE OWNED CATWALKS AND SCAFFOLDS," is added as attached.

In the Special Provisions, Section 9, "DESCRIPTION OF BRIDGE WORK," is revised as attached.

In the Special Provisions, Section 10-1.02, "ORDER OF WORK," the following paragraphs are added after the seventh paragraph:

"In the truss spans, the deck of the 2 adjacent suspended spans shall not be removed simultaneously. The progress of deck removal and replacement shall be contiguous unless approved by the Engineer. A suspended span is defined as follows:

- Between Piers 4 and 5, a suspended span is from the centerline of Pier 4 to the finger-type expansion joint near Pier 5
- Between Piers 12 and 13, a suspended span is from the finger-type expansion joint near Pier 12 to the centerline of Pier 13.
- Except as noted above, all other suspended spans are located between the finger-type expansion joint and the fixed hinge joint.

Attention is directed to "Bridge Removal," of these special provisions."

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In the Special Provisions, Section 10-1.02, "ORDER OF WORK," the tenth paragraph is revised as follows:

"At Benicia-Martinez Bridge (Bridge No. 28-0153L) existing bar reinforcing steel and steel girder flange surfaces that are exposed when a section of the lightweight concrete bridge deck slab is removed shall not be left exposed to the marine environment for more than 30 days before being embedded in concrete."

In the Special Provisions, Section 10-1.19, "COOPERATION," the following paragraph is added after the last paragraph:

"It is anticipated that the Benicia-Martinez Bridge (Bridge No. 28-0153L) catwalk will not be available for Contractor's use when occupied by the State crew doing maintenance and repair work on the bridge during the progress of the work of this contract."

In the Special Provisions, Section 10-1.28, "MAINTAINING TRAFFIC," Lane Closure Chart 1B is added as attached.

In the Special Provisions, Section 10-1.38, "EXISTING HIGHWAY FACILITIES," subsection "REMOVE ASPHALT CONCRETE," the second paragraph is revised as follows:

"The excavated asphalt concrete shall not be used as fill within the project limits. Limited quantities of processed (ground/recycled) excavated asphalt concrete may be used as sub-base or base material within the project limits in conformance with the provisions of Section 25, "Aggregate Subbases," or Section 26, "Aggregate Bases," of the Standard Specifications and "Aggregate Subbase," and "Aggregate Base," of these special provisions. Excess excavated asphalt concrete shall either be taken to a licensed recycling facility or disposed of at a Class II landfill."

In the Special Provisions, Section 10-1.41, "EARTHWORK," the following paragraph is added after the second paragraph:

"Excavated material, other than Class II material, may be used as fill within the project limits in conformance with the provisions of Section 19, "Earthwork," of the Standard Specifications."

In the Special Provisions, Section 10-1.41, "EARTHWORK," the following paragraph is added after the third paragraph:

"No construction equipment shall be placed or driven directly on the excavation area of Marina Vista Road during excavation operations and placement of lightweight embankment material (cellular concrete)."

In the Special Provisions, Section 10-1.41, "EARTHWORK," the following paragraph is added after the fourth paragraph:

"Attention is directed to the installation of Drainage System No. 3 where a hard sandstone rock is expected to be encountered. This may require non-conventional excavating equipment such as a ripper to excavate hard sandstone rock. The cost of excavating hard sandstone rock will be considered included in the contract price paid per linear meter for the alternative pipe and no additional compensation will be allowed therefore."

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In the Special Provisions, Section 10-1.46, "SHORING," the second paragraph is revised as follows:

"The material used to construct shoring shall be steel sheet piles with a minimum thickness of 9.5mm. The contractor may use alternate shoring system as approved by the Engineer at locations not designated as shoring (steel sheet piling) on the plans."

In the Special Provisions, Section 10-1.47, "SHOULDER BACKING," the second paragraph is revised as follows:

"Material for shoulder backing shall be imported material conforming to the following grading and quality requirements:"

In the Special Provisions, Section 10-1.47, "SHOULDER BACKING," the third paragraph and table are deleted.

In the Special Provisions, Section 10-1.87, "CLEAN AND PAINT STRUCTURAL STEEL," in the third paragraph, Item 3, is added as follows:

"3. Contact surfaces of existing stringers and floor beams to receive new lightweight deck concrete."

In the Special Provisions, Section 10-1.103, "MISCELLANEOUS METAL (BRIDGE)," in the third paragraph, Item I, is added as follows:

"I. TOS platform ladders."

In the Special Provisions, Section 10-3.23, "TRAFFIC OPERATIONS SYSTEM (MAIN BRIDGE SPAN)", sub-section, "FIBER OPTIC OUTSIDE PLANT CABLE," above the "General" heading, "Fiber Optic Glossary," is added as attached.

In the Special Provisions, Section 10-3.23, "TRAFFIC OPERATIONS SYSTEM (MAIN BRIDGE SPAN)," sub-section, "FIBER OPTIC OUTSIDE PLANT CABLE," sub-title, "Passive Cable Assemblies and Components," "Fiber Optic Cable Labeling," is added as attached.

In the Special Provisions, "Section 10-3.23, "TRAFFIC OPERATIONS SYSTEM (MAIN BRIDGE SPAN)," sub-section, "FIBER OPTIC OUTSIDE PLANT CABLE," sub-title, "Fiber Distribution Frame (FDF)," "Fiber Distribution Unit," is added as attached.

In the Special Provisions, "Section 10-3.23, "TRAFFIC OPERATIONS SYSTEM (MAIN BRIDGE SPAN)," sub-section, "MODEL 330T CONTROLLER CABINET," subsections "POWER STRIP," "VIDEO AND PTZ CONTROL DATA TRANSMISSION SYSTEM," "VIDEO TRANSMITTER/ DUPLEX DATA," "VIDEO RECEIVER/ DUPLEX DATA," "INSTALLATION OF VIDEO AND PTZ CONTROL DATA TRANSMISSION SYSTEM," are added at the end of the Section as attached.

In the Special Provisions, Section 10-3.235, "SERVICE MANUAL REQUIREMENTS," is added as attached.

In the Special Provisions, Section 12-3.03, "BUILDING MISCELLANEOUS METAL," is added as attached.

In the Special Provisions, Section 12-3.04, "STAINLESS STEEL CABLE INFILL," is added as attached.

In the Special Provisions, Section 12-3.05, "PAINTING," is added as attached.

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In the Proposal and Contract, the Engineer's Estimate Items 46, 58, 79, 104, 106, 107, 108, 109, 136, 154, 177, 232 are revised.

To Proposal and Contract book holders:

Replace pages 5, 6, 8, 9, 10, 11 and 14 of the Engineer's Estimate in the Proposal with the attached revised pages 5, 6, 8, 9, 10, 11 and 14 of the Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Attached is a copy of the Information Handout.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the NOTICE TO CONTRACTORS section of the Notice to Contractors and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This office is sending this addendum by GSO overnight mail to Proposal and Contract book holders to ensure that each receives it. A copy of this addendum and the modified wage rates are available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Division of Engineering Services - Office Engineer

Attachments

5-1.36 STATE OWNED CATWALKS AND SCAFFOLDS

On the Benicia-Martinez Bridge, there are State owned catwalks that will be available for Contractor's use when not being used by the bridge paint and maintenance forces. Arrangements for their use shall be made to the Engineer and maintenance forces 7 calendar days in advance.

Attention is directed to "Cooperation" elsewhere in these special provisions.

State maintenance personnel will instruct Contractor's personnel on how to use the catwalks. Thereafter, operation of the catwalks for contract work will be the responsibility of the Contractor.

The catwalks were designed to support maintenance personnel using small tools and equipment and painting equipment only. The Contractor shall not impose any greater loads upon the catwalk than intended by the catwalk design.

Attention is directed to Section 7-1.11, "Preservation of Property," of the Standard Specifications.

The State owned traveling scaffolds will not be available for the Contractor's use.

Attention is directed to "Bridge Removal (Portion), Traveler Rail," of these special provisions for the Contractor's optional use of the steel traveler rails at the south girder spans.

SECTION 9. DESCRIPTION OF BRIDGE WORK

The bridge work to be done consists, in general, of modifying, repairing and resurfacing decks at 2 bridge structures, removing 3 bridge structures removing the existing toll plaza and building structure, adding railing and panel at the new toll plaza and building structure, and furnishing and placing TOS platform ladders on the new bridge structure as shown on the plans and briefly described below:

BENICIA-MARTINEZ
(Bridge No. 28-0153)

Modify, repair, resurface deck and construct pedestrian bike path (PBP) with new and modified concrete barriers including rail fence, deck repairs, joint repairs, Pier 3 expansion joint repair, and clean and replace joint seals on an 18-span existing bridge. At south girder spans, remove existing traveler rails, and furnish and install new traveler rails.

NEW BENICIA-MARTINEZ
(Bridge No. 28-0153R)

Furnish and place TOS platform ladders on the new structure.

EXISTING BENICIA-MARTINEZ TOLL PLAZA AND ADMINISTRATION BUILDING

Remove the toll plaza and administration building. See Section12, "Building Work," of these special provisions.

NEW BENICIA-MARTINEZ TOLL PLAZA AND ADMINISTRATION BUILDING

Furnish and place railing on the retaining wall along the front walkway of the new toll plaza and administration building. Furnish and place enclosure panel near vertical platform lift. See Section12, "Building Work," of these special provisions.

MOCOCO OVERHEAD (MODIFIED)
(Bridge No. 28-0171)

Release and permanently raise last 3 spans of the left bridge to match adjacent right spans; remove and place new bearing assemblies at 2 bents and an abutment of the left bridge; modify, repair and resurface deck; clean and replace joint seals; modify ductile frame steel bracket; and remove and place structural concrete approach slabs for a 10-span steel girder with concrete deck bridge.

PINE LAKE UNDERCROSSING (REMOVAL)
(Bridge No. 23-0128R)

Remove a 3-span continuous reinforced concrete slab bridge with asphalt concrete overlay on reinforced concrete (3) column bents on spread footings and reinforced concrete open end diaphragm abutments with “U” wingwalls on reinforced concrete piles. Salvage metal railing from the Type 1 barrier railing.

E780-N680 CONNECTOR OVERCROSSING (REMOVAL)
(Bridge No. 23-0129F)

Remove a 5-span continuous reinforced concrete box girder (4 cell) bridge on reinforced concrete single column bents and reinforced concrete cantilever abutments with “U” wingwalls all on spread footings. The metal railing has been removed previously from the Type 2 barrier railing. The metal beam guard railing has been removed previously.

The bridge no longer carries traffic, however there is live traffic below it.

ROUTE 780/680 SEPARATION (REMOVAL)
(Bridge No. 23-0130)

Remove a 3-span continuous reinforced concrete box girder (5 cell) bridge on single column reinforced concrete bents and reinforced concrete cantilever abutments with “U” wingwalls all on spread footings. Salvage metal railing from the Type 1 barrier railing.

Chart No. 1B
Freeway/Expressway Lane Requirements

County: Contra Costa/Solano	Route/Direction: 680/Northbound	KP: 38.82/Pier #15 (see remark) PM: 24.26/Pier #15 (see remark)

Closure Limits: From Mococo OH Br. 28-171 (New Toll Plaza) to Pier #15 (Station 24+ 62)

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	4	4	4	4	4	4	4	4	4	4											4	4	4	4	
Fridays	4	4	4	4	4	4	4	4	4	4												4	4	4	
Saturdays	4	4	4	4	4	4	4	4															4	4	
Sundays	4	4	4	4	4	4	4	4	4													4	4	4	

Legend:

4	Provide at least four adjacent through freeway lanes open in direction of travel
	Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:

- See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.
- Pier #15 is located on the new Benicia-Martinez bridge at Station 26 + 62.

Fiber Optic Glossary

Breakout.—The cable "breakout" is produced by (1) removing the jacket just beyond the last tie-wrap point, (2) exposing 1 to 2 m of the cable buffers, aramid strength yarn and central fiberglass strength member, and (3) cutting aramid yarn, central strength member and the buffer tubes to expose the individual grass fibers for splicing or connection to the appropriate device.

Connector.—A mechanical device used to align and join two fibers together to provide a means for attaching to and decoupling from a transmitter, receiver, or another fiber (i.e., patch panel).

Connectorized.—A term that describes the termination point of a fiber after connectors have been affixed.

Connector Module Housing (CMH).—A patch panel used in the FDU to terminate singlemode fibers with most common connector types. It may include a jumper storage shelf and a hinged door.

Couplers.—Couplers are devices which mate two fiber optic connectors to facilitate the transition of optical light signals from one connector into another. Couplers may also be referred to as: adapters, feed-thrus, and barrels. They are normally located within FDUs mounted in panels. They may also be used unmounted, to join two simplex fiber runs.

Fiber Distribution Unit (FDU).—A combination of the Connector Module Housing (CMH) and the Splice Module Housing (SMH) in the same enclosure.

Fiber Storage Enclosure (FSE).—Designed for holding excess cable slack for protection. The FSE allows the user flexibility in equipment location and the ability to pull cable back for resplicing.

F/O.—Fiber optic.

FOIP.—Fiber optic inside plant cable.

FOP.—Fiber optic outside plant cable.

FTC.—Fiber Trunkline Cable. Singlemode, 72 fibers.

FPC.—Fiber Pigtail Cable. Singlemode, 12 fibers.

FOTP.—Fiber optic test procedure(s) as defined by EIA/TIA standards.

Light Source.—A transportable piece of fiber optic test equipment that, when coupled with a power meter, is used to perform end-to-end attenuation testing. It contains a stabilized light source operating at the designed wavelength of the system under test. It also couples light from the source into the fiber to be received at the far end by the receiver.

Link.—A passive section of the system, the ends of which are to be connected to active components. A link may include splices and couplers. For example, a video link may be from video F/O transmitter to video F/O receiver.

Link Loss Budget.—A calculation of the overall permissible attenuation from the fiber optic transmitter (source) to the fiber optic receiver (detector).

Loose Tube Cable.—Type of cable construction in which fibers are placed in buffer tubes to isolate them from outside forces (stress). A flooding compound or material is applied to the interstitial cable core to prevent water migration and penetration.

Optical Time Domain Reflectometer (OTDR).—A piece of fiber optic test equipment similar in appearance to an oscilloscope that is used to measure the total amount of power loss between two points. It provides a visual and printed display of the relative location of system components such as fiber sections, splices and connectors as well as the losses that are attributed to each component.

Patchcord.—A short jumper used to join two Connector Module Housing (CMH) couplers, and or a CMH and an active device (Optical Electronic devices).

Pigtail.—Relatively short length of fiber optic cable that is connectorized on only one end. All pigtails shall be tight buffer cable.

Power Meter.—A transportable piece of fiber optic test equipment that, when coupled with a light source, is used to perform end-to-end attenuation testing. It contains a detector that is sensitive to light at the designed wavelength of the system under test. Its display indicates the amount of power injected by the light source that arrives at the receiving end of the link.

Segment.—A section of fiber optic cable that is not connected to any active device and may or may not have splices per the design.

Splice.—The permanent joining of fiber ends to identical or similar fibers.

Splice Closure.—An environmentally sealed container used to organize and protect splice trays. The container allows splitting or routing of fiber cables from multiple locations.

Splice Module Housing (SMH).—Stores splice trays as well as pigtails and short cable lengths.

Splice Tray.—A container used to organize and protect spliced fibers.

Tight Buffer Cable.—Type of non-breakout cable construction where each glass fiber is tightly buffered (directly coated) with a protective thermoplastic coating to 900 m with the exception of the protective thermoplastic coating. The tight buffer cable shall meet all the characteristics of the fiber in the fiber optic outside plant cable specified elsewhere in these specifications.

FIBER OPTIC CABLE LABELING

Marking and labeling of fiber optic cable plant throughout this project shall be as follows:

Cable to Cable Splices.—The cable jackets labeled at entry to splice closure with cable ID and cable direction relative to the splice point (E, SW, etc.). In addition, the buffer tubes labeled at entry to splice trays with cable ID and cable direction, and the fibers labeled at splice with cable direction and fiber number.

Cable to Fiber Distribution Unit Splices.—The cable jackets labeled on the inside of the distribution panel with cable ID, and buffer tubes labeled at entry to splice tray with cable ID. In addition, fibers labeled at entry to splice with fiber number, pigtails labeled at connector with cable ID and fiber number, and front panels labeled at connector with cable ID and fiber number.

Patchcords.—The fibers labeled at each connector with "FUNCTION" of signal being carried.

For labeling purposes, "IN" shall be used to describe the segment of cable, buffer tube, or fiber which runs towards the hub. For labeling purposes, "OUT" shall be used to describe the segment of cable, buffer tube, or fiber which runs away from the hub towards the elements.

All labels shall be made from vinyl sleeving or tags permanently affixed to the jacket, buffer tube or fiber and shall be marked with permanent ink."

Fiber Distribution Unit

Fiber distribution unit (FDU) shall be EIA-310 standard mount type as shown on the plans. The connector panel shall be located internal to the unit so as not expose fiber optic connections. Cable accesses shall have grommets.

FDUs shall be sized to contain sufficient connector module housings (CMHs) to handle the associated cables and their respective breakouts. In cables with smaller fiber counts, more than one cable may be assigned to an FDU but fibers from the same cable shall not be split between two FDUs. In all cases, FDUs shall be capable of housing and securing required splice trays in splice module housings (SMH).

All FDUs shall house the splice trays needed to store the termination (breakout to pigtail) splices.

Connector module housings (CMH), splice module housings (SMH) shall be mounted with adjustable mounting brackets for horizontal positioning. The front covers shall be Lexan with a rear cover of metal of the same gage and color as the remainder of the FDU rack. Panels shall have twelve coupler capacity and all panel positions shall be filled with couplers. Where panels have spare ST positions, the couplers shall have dust covers on both sides.

Coupler capacities shall usually range from 12 to 72 fibers or couplers, as indicated on the plans. Couplers shall be mounted in panels housed within the FDU. Spare panel positions within the FDU shall have blanks or panels ready for future expansion. The front and back covers of the FDU shall be retractable or removable to facilitate internal installation.

Full compensation for the fiber distribution unit shall be considered as included in the contract lump sum price paid for "Fiber Optic Termination in Model 330T Cabinet" at location involved (excluding the units needed for hub communication system), and no additional compensation will be made therefor.

POWER STRIP

Each power strip shall have maximum rating of 15 A, 126 V(ac), 60 Hz, 1835 W (continuous duty). The power strip shall have surge protection with UL_1449 Clamping Level of 400 V, a IEEE Let-Through Voltage rating of less than 340 V and a single-pulse energy rating of 360 J. The power strip shall rated for EMI/RFI noise protection at 20 dB. Each power strip shall be 43 mm (H) x 432 mm (W) x 114 mm (D) and shall not weigh more than 2.3 kg. The power strip shall rack mount to a standard EIA 310, 483 mm rack cabinet. The power strip shall have four outlets in front and four in back, each 53 mm apart and rotated 90 degree, "U" ground facing down.

VIDEO AND PTZ CONTROL DATA TRANSMISSION SYSTEM

A video transmitter duplex data (VTDD) unit and a video receiver duplex data (VRDD) unit shall be connected by singlemode optical fiber to form a video and PTZ control data link. The video and PTZ control data link is to provide simplex transmission and reception of a full-motion NTSC baseband video signal from camera end to video matrix switch as well as full-duplex data between the camera end and the data matrix switch.

Link budget via singlemode optical fiber (9/125_m) shall be at least 25 dB from VTDD to VRDD and at least 37 dB from VRDD end to VTDD. For the direction from VTDD to VRDD (9/125_m SM fiber), the transmit coupled power shall be 7 dBm and the minimum receiver input shall be -32 dBm. For the direction from VRDD to VTDD via 9/125_m SM fiber, the transmit coupled power shall be -7 dBm and the minimum receiver input shall be -44 dBm.

A loopback test shall test the data encoding and decoding and input/output circuitry by looping the data input back to the local output. At the optical side, the fiber optic data will be loopback from the local receiver to the local transmitter, effecting a data loopback at the remote unit. This shall test both the remote data encoder and the decoder as well as both directions of the optical link.

Both VTDD and VRDD shall operate over a temperature range of 0°C to 70°C. The VTDD shall be stand-alone type shall be mounted securely on a shelf that fastened to EIA 310 standard equipment rack in each cabinet. The VRDD at the hub location shall be rack mount type installed in a card cage assembly. The card cage assembly shall be EIA 310 rack-mount type with at least 14 slots and with power supplies for redundancy. The size and mounting arrangements shall be consistent with the space allocated in the cabinet layout drawings as shown on the plans. The equipment shall be mounted in a manner which allows easy access to all connections and indicators. All mounting hardware and mounting shelf shall be provided by the Contractor.

VIDEO TRANSMITTER/ DUPLEX DATA

The video transmitter/duplex data (VTDD) unit shall accept any NTSC baseband video signal and an EIA 232 data signal to convert it to a signal suitable for launching into one singlemode optical fiber.

The video interface to VTDD shall be a nickel-plated, bulkhead female BNC style connector with a gold plated contact. The video transmitter shall accept a composite video signal at a level of 1.0 V peak to peak between sync tip and reference white, as measured on an oscilloscope. The transmitter shall operate as specified when the peak-to-peak value of the signal varies between 0.71 and 1.4 V. The nominal input impedance shall be 75 Ω and the return loss shall be at least 30 dB in compliance with EIA RS 250 for an unbalanced to ground connection. Differential gain shall be less than 3 percent typical, 5 percent maximum at 3.58 MHz. Differential phase shall be less than 3 degree typical, 5 degree maximum at 3.58 MHz. Bandwidth with at -3 dB points shall be between 2 Hz to 15 MHz. Weighted signal to noise ratio (SNR) shall be 60 dB for greater than or equal to -21 dBm input to the receiver.

The video signal and the EIA 232 data shall be applied to the optical source to produce a pulse rate modulated optical signal using pulse frequency modulation (PFM) technique. The VTDD shall have a laser emitter with a wavelength at 1550 nm to transmit simplex video and EIA 232 signals. The VTDD shall receive EIA 232 data using 1310 nm wavelength. The transmission range shall be up to 60 km via a singlemode fiber optic (9/125_m). The transmitter shall interface to fiber with an ST style compatible connector. The video transmitter launch power shall be defined as the power launched by the transmitter into at least one meter of step index optical fiber with a nominal core diameter of 8.3 µm, a nominal cladding diameter of 125 µm and a theoretical numerical aperture of 0.275. The video transmitter launch power shall be at least 18 dB greater than the video receiver sensitivity. The optical modulation bandwidth required by the video transmitter for specified video link performance shall be 60 MHz, maximum.

The video transmitter shall include a power supply, which may be external to the remainder of the video transmitter components. The transmitter shall be powered from existing 120 V(ac) ±15 percent, 60 Hz ±5 percent power receptacle. The power supply shall supply all voltages required by the video transmitter for operation. The video transmitter shall have a panel indicator visible from the front that shows power "ON".

VIDEO RECEIVER/ DUPLEX DATA

The Video Receiver/ Duplex Data (VRDD) unit shall be compatible with the VTDD and from the same manufacturer. The VRDD shall receive the optical signal launched into the singlemode optical fiber by the corresponding VTDD. The optical interface to the receiver shall be a ST style connector. The video receiver shall use a PIN photodiode or an avalanche photodiode to convert the optical signal into an electrical signal. The receiver sensitivity shall be defined as the minimum optical power required to operate at the minimum video link and EIA 232 data signal performance specifications. The VRDD shall have an optical dynamic range of at least 10 dB. If the saturation level of the receiver is not greater than the transmitter launch power level minus one dB, attenuators shall be installed between the fiber and the receiver to attenuate the received signal level. The video output interface from the video receiver shall be a nickel-plated, bulkhead BNC-type connector with a gold plated contact.

The baseband video signal output from the video receiver when it is receiving an optical signal from the video transmitter at an average power level equal to the video receiver sensitivity shall meet the following performance specifications defined and measured in accordance with EIA 250 for end-to-end modified performance:

a. Output signal level.
b. Amplitude vs. frequency characteristic.
c. Chrominance to luminance gain inequality.
d. Chrominance to luminance delay inequality.
e. Field time waveform distortion.
f. Line time waveform distortion.
g. Insertion gain variation.
h. Differential gain.
i. Differential phase.
j. Signal-to-noise ratio.
k. Signal-to-low frequency noise ratio.

The video receiver installation shall include all mounting hardware necessary to mount it in the EIA 310 standard equipment rack in each cabinet. The size and mounting arrangements shall be consistent with the space allocated in the cabinet layout plans. It shall be mounted in a manner that allows easy access to all connections and indicators.

The video receiver shall operate over a temperature range of 0˚C to 70˚C. Power shall be supplied from an existing 115 V(ac) ±15 percent, 60 Hz ±5 percent, power receptacle inside the cabinet reserved for communications equipment. The video receiver shall include a power supply, which may be external to the single video receiver. The power supply shall supply all voltages required by the video receiver for operation, and panel indicators visible from the front of the receiver that show DC power on and received optical signal present.

The Contractor shall perform pre-installation testing to verify that the single VTDD and single video VRDD are compatible, meet manufacturers specifications and the requirements of these special provisions.

INSTALLATION OF VIDEO AND PTZ CONTROL DATA TRANSMISSION SYSTEM

The Contractor shall be responsible for all testing and documentation required to establish approval and acceptance of the production, installation and operation of these materials and equipment. The specific quality control requirements require the Contractor to input a video test signal into the video transmitter and set the optical power measured at the receiver end of the fiber to the video receiver sensitivity level. The optical signal shall then be connected to the video receiver with a monitor connected to its output. The Engineer shall then qualitatively assess the monitor output. The signal-to-noise ratio and signal-to-low frequency noise ratio shall be measured and recorded.

All indicators shall be verified to function correctly.

10-3.235 SERVICE MANUAL REQUIREMENTS

The Contractor shall provide to the Engineer a minimum of one copy of service manual per camera station for the camera unit, pan/tilt unit, camera control unit (CCU), video encoder unit (VEU), video decoder unit (VDU) and integrated services digital network terminal adapter (ISDN TA) unit under this special provisions. Each manual shall contain the following sections and sub-sections.

A. General Information Section

1. A list of applicable subassemblies that comprise the specified equipment.
2. Overall description of the equipment design features (including all enhance features if applicable), performance, and applications.
3. Equipment specifications summary.
4. Equipment installation instructions.

B. Theory of Operations Section

1. Theory of operation of the standard equipment, with unique or unusual circuitry described in detail.
2. Theory of operation reflecting any modifications to the standard equipment.

C. Maintenance Section

1. Recommended test equipment and fixtures, or minimum operational and performance requirements for appropriate test equipment.
2. Trouble shooting information and charts.
3. Removal and installation procedures for replacing assemblies and subassemblies, if not obvious or if improper sequencing of steps may result in component damage.

D. Replacement Parts Section

1. Each manual shall contain an equipment replacement parts list including electrical parts, mechanical parts and assemblies.
2. All semiconductors shall be identified by the supplier's numbers and by JEDEC numbers if applicable.

E. Diagram Section

1. Schematic diagrams(s) identifying all circuit components and showing normal test voltages and levels.
2. An overall functional block diagram.
3. Detailed interconnecting diagram(s) showing wiring between modules, circuit boards and major components.
4. Pictorial circuit board layout diagram(s) showing both component placement and printed wiring detail.
5. Diagram(s) showing location of circuit boards and other subassemblies.
6. Exploded view diagram(s) of complex mechanical assemblies.

F. Physical Requirements

1. All pages, including latest revisions, shall be securely fastened together between protective covers (loose-leaf ring binding is acceptable).
2. No page shall be subject to fading from exposure to any normal source of ambient lighting (ozalid reproduced pages are not acceptable).

12-3.03 BUILDING MISCELLANEOUS METAL

PART 1 - GENERAL

Scope: This work shall consist of fabricating, furnishing and installing building miscellaneous metal in accordance with the details shown on the plans and these special provisions.

Building miscellaneous metal shall consist of the following:

Closure panel at vertical platform lift
Steel pipe guard railing

Including all anchors, fastenings, hardware, accessories and other supplementary parts necessary to complete the work.

REFERENCES

Codes and Standards: Welding of steel shall be in accordance with American Welding Society (AWS) D 1.1, "Structural Welding Code-Steel" and D 1.3, "Structural Welding Code-Sheet Steel."

SUBMITTALS

Product Data: Submit manufacturer's specifications, anchor details and installation instructions for products used in miscellaneous metal fabrications.

Working Drawings: Working drawings of fabricated items shall be submitted for approval.

QUALITY ASSURANCE

Shop Assembly: Preassemble items in shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark all units for reassembly and installation.

Inspection and Tests: Materials and fabrication procedures shall be subject to inspection and tests by the Engineer, in mill, shop and field. Such tests will not relieve the Contractor of responsibility of providing materials and fabrication procedures in compliance with specified requirements.

PART 2 - PRODUCTS

MATERIALS

Steel Bars, Plates and Hot-rolled Shapes: Steel bars, plates and hot-rolled shapes shall conform to ASTM Designation: A 36/A 36M.

Galvanized Sheet Steel: Galvanized sheet steel shall conform to ASTM Designation: A 653/A 653M, Grade 33 [230]. Galvanizing shall be G60 [Z180].

Pipe: Pipe shall be commercial quality standard steel pipe.

Bolts, Studs, Threaded Rods, Nuts and Washers:

Bolts, studs, threaded rods, and nuts for general application shall conform to ASTM Designation: A 307.

Washers shall be commercial quality.

Fittings: Brackets, bolt, threaded studs, nuts, washers, and other fittings for railings and handrailings shall be commercial quality pipe and fittings.

Resin Capsule Anchors: Stud anchors for resin capsule anchors shall conform to ASTM Designation: A 307 threaded steel rod with hex nut and washer and sealed glass capsule or cartridge containing an adhesive composed of unsaturated polyester resin and benzol peroxide coated quartz sand. Resin capsule shall be Hilti; Molly; or equal.

FABRICATION

Workmanship and Finish:

Workmanship and finish shall be equal to the best general practice in modern shops.

Miscellaneous metal shall be clean and free from loose mill scale, flake rust and rust pitting, and shall be well formed and finished to shape and size with sharp lines and angles. Bends from shearing or punching shall be straightened.

The thickness of metal and details of assembly and support shall give ample strength and stiffness.

Built-up parts shall be true to line and without sharp bends, twists and kinks. Exposed ends and edges of metal shall be milled or ground smooth, with corners slightly rounded.

Joints exposed to the weather shall be made up to exclude water.

Galvanizing: Items indicated on the plans to be galvanized shall be hot-dip galvanized after fabrication. The weight of galvanized coating shall be at least 460 grams per square meter of surface area.

Steel Pipe Railings and Handrailings:

Pipe handrailing shall consist of handrailing elements supported by metal brackets (wall type) or handrailing elements supported by tubular steel posts (post type).

Ends of railing pipe shall be closed, except for a 3-mm diameter weep hole at the low point.

All corners on railings shall be rounded. Simple and compound curves shall be formed by bending pipe in jigs to produce uniform curvature; maintain cylindrical cross-section of pipe throughout the bend without buckling, twisting or otherwise deforming exposed surfaces of the pipe.

Wall brackets, end closures, flanges, miscellaneous fitting and anchors shall be provided for interconnections of pipe and attachment of railings and handrails to other work. Inserts and other anchorage devices shall be furnished for connecting railings and handrails to concrete or masonry.

Steel railing shall be galvanized after fabrication. After galvanizing, all elements of the railing shall be free of fins, abrasions, rough or sharp edges, and other surface defects and shall not be kinked, twisted or bent.

PART 3 - EXECUTION

GENERAL

Anchorages:

Anchorage devices and fasteners shall be provided for securing miscellaneous metal in-place construction; including threaded fasteners for concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws and other connectors.

Cutting, drilling and fitting shall be performed as required for installation of miscellaneous metal fabrications. Work is to set accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

Steel Pipe Railings and Handrailings:

Railings shall be adjusted prior to anchoring to ensure matching alignment at abutting joints. Secure posts and railing ends to building construction as shown on the plans.

Resin Capsule Anchors: Resin capsule anchors shall be installed in accordance with the manufacturer's instructions.

DAMAGED SURFACES

Galvanized surfaces that are abraded or damaged shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating. The clean areas shall then be painted with 2 spot applications of a coating conforming to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) and listed on MPI List Number 18, Primer, Zinc Rich, Organic.

12-3.04 STAINLESS STEEL CABLE INFILL

PART 1 - GENERAL

Scope: This work shall consist of furnishing and installing horizontal stainless steel cable infill, attachments, anchors, fasteners, and fittings in accordance with the details shown on the plans and these special provisions.

SUBMITTALS

Product Data: Manufacturer's specifications, standard fabrication details, anchor details, and installation instructions for the stainless steel cable infill assembly shall be submitted to the Engineer for approval.

Working Drawings: Working drawings for the stainless steel cable infill assembly shall be submitted to the Engineer for approval. Said drawings shall show complete and accurate details of all material types; component shapes, sizes, and profiles; infill cable size and pattern; cable end terminations, turnbuckles, and connections; connection and anchorage details; size and type of fasteners; miscellaneous hardware; finishes; fabrication details; and fabrication methods.

Product Samples: Physical samples of the actual infill cable, terminations, turnbuckles, and connections proposed for use in the cable infill shall be submitted to the Engineer for approval along with the working drawings.

QUALITY ASSURANCE

Codes and Standards: The design, fabrication, and testing of the stainless steel guardrail cable infill assembly shall conform to the requirements of ASTM Designation: E 985.

The following references shall also apply to the stainless steel guardrailing assembly:

ASTM Designation: A 492 - Standard Specification for Stainless Steel Rope Wire.

ASTM Designation: A 555/A 555M - Standard Specification for General Requirements for Stainless Steel Wire and Wire Rods.

PART 2 - PRODUCTS

MATERIALS

Stainless steel infill cable material shall be stainless steel wire rope conforming to the requirements of ASTM Designation: A 492, Type 316. Cable strand shall be 1 x 19.

Stainless steel rods shall conform to the requirements of ASTM Designation: A 555/A 555M, Type 316.

Stainless steel fittings shall conform to the requirements of ASTM Designation: A 666, Type 316.

Stainless steel anchors shall be Type 316.

Materials shall have smooth and flat surfaces, unless otherwise indicated. Materials without seam marks, roller marks, rolled trade names, or blemishes shall be used.

Shapes and Sizes: Shapes and sizes of material shall be a shown on the plans and in the working drawings.

Cable End Terminations and Turnbuckles: Cable end terminations shall be swaged, dome-headed type fittings. Turnbuckles shall be swaged.

Fabrication:

Workmanship and finish shall be equal to the best general practice in modern shops.

Components of stainless steel guardrailing assembly shall be fabricated and preassembled in the shop to greatest extent possible.

Exposed work shall be true to line and level, with accurate angles and surfaces, and straight edges.

PART 3 - EXECUTION

INSTALLATION

The stainless steel guardrail cable infill assembly shall be installed accurately in location, alignment, and elevation as shown on the plans, and in accordance with manufacturer's instructions and approved working drawings.

Components shall be 1) installed plumb and level, and 2) accurately fitted, free from distortion or defects.

Bolts and screws shall be concealed whenever possible. Where not concealed, flush countersunk fastenings shall be used.

Cables shall be tensioned as recommended by cable fittings manufacturer and as shown in the approved working drawings.

12-3.05 PAINTING

PART 1 - GENERAL

Scope: This work shall consist of preparing surfaces to receive coatings, and furnishing and applying coatings, in conformance with the schedules and details shown on the plans and these special provisions.

The coatings specified in this section are in addition to any factory finishes, shop priming, or surface treatment specified elsewhere in these special provisions.

DEFINITIONS

Detergent Wash: Removal of dirt and water-soluble chemicals by scrubbing with a solution of detergent and water, and removal of all solution and residues with clean water.

Hand Cleaning: Removal of dirt, loose rust, mill scale, excess base material, filler, aluminum oxide, chalking paint, peeling paint, or paint that is not firmly bonded to the surfaces by using hand or powered wire brushes, hand scraping tools, power grinders, or sandpaper and removal of all loose particles and dust prior to coating.

Mildew Wash: Removal of mildew by scrubbing with a solution of detergent, hypochlorite-type household bleach, and warm water, and removal of all solution and residues with clean water.

Abrasive Blasting:

Removal of loosely adhering paint, dirt, rust, mill scale, efflorescence, weak concrete, or laitance, shall be by the use of airborne abrasives. Loose particles, dust, and abrasives shall be removed by blasting with clean, oil-free air.

Abrasives shall be limited to mineral grit, steel grit, or steel shot, and shall be graded to produce the surface profile recommended in the manufacturer's data sheet.

Steam Cleaning: Removal of oil, grease, dirt, or other foreign matter by using steam generated by commercial steam cleaning equipment, from a solution of water and steam cleaning compounds, and removal of all residues and cleaning compounds with clean water.

TSP Wash: Removal of oil, grease, dirt, paint gloss, and other foreign matter by scrubbing with a solution of trisodium phosphate and warm water, and removal of all solution and residues with clean water.

Water Blasting: Removal of dirt, loose scale, chalking, or peeling paint by low-pressure water cleaning. Water blasting shall be performed in conformance with the requirements in SSPC-SP12 and shall produce a surface cleanliness meeting the requirements of SSPC-SP12-WJ4. Equipment used shall have a minimum flow rate of 6.8 liters per minute. If a detergent solution is used, it shall be biodegradable and shall be removed from all surfaces with clean water.

Protection:

The Contractor shall provide protective devices, such as tarps, screens or covers, as necessary to prevent damage to the work and to other property or persons from all cleaning and painting operations.

Paint or paint stains on surfaces not designated to be painted shall be removed by the Contractor at the Contractor's expense and the original surface shall be restored.

SUBMITTALS

Manufacturer's descriptive data, a materials list, and color samples shall be submitted for approval.

Product descriptive data shall include product description, manufacturer's recommendations for product mixing, thinning, tinting, handling, site environmental requirements, product application, and drying time.

Materials list shall include manufacturer's name, trade name, and product numbers for each type coating to be applied.

Color samples shall be 1) manufacturer's color cards, approximately 50 mm x 75 mm, and 2) on the same type of material that is receiving the coating for each color of coating shown on the plans.

QUALITY ASSURANCE

Certificates of Compliance: Certificates of Compliance shall be furnished when products are required to conform with the requirements of The Society for Protective Coatings (SSPC) in conformance with the requirements specified in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

REGULATORY REQUIREMENTS

Coatings and applications shall conform to the rules for control of Volatile Organic Compound (VOC) emissions adopted by the air quality control district in the air basin in which the coatings are applied.

SITE ENVIRONMENTAL REQUIREMENTS

Coatings shall be applied in conformance with the environmental constraints specified in the manufacturer's printed instructions. These conditions shall be maintained until the coating has cured and is ready for recoat.

Continuous ventilation shall be provided during application of the coatings.

Adequate lighting, as determined by the Engineer, shall be provided while surfaces are being prepared for coatings and during coating applications.

DELIVERY, STORAGE, AND HANDLING

Products shall be delivered to the site in sealed, labeled containers and stored in a well-ventilated area at an ambient air temperature of not less than 7°C. Container labeling shall include manufacturer's name, type of coating, trade name, color designation, drying time, and instructions for tinting, mixing, and thinning.

MAINTENANCE STOCK

Upon completion of coating work, a full 3.8 liter container of each type and color of finish coat used shall be delivered to the location at the project site designated by the Engineer. Containers shall be tightly sealed and labeled with color, texture, and room locations where used, in addition to the manufacturer's standard product label.

PART 2 - PRODUCTS

Products for each coating system shall be from a single manufacturer and shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI). Each product shall be shown on the MPI Approved Products List unless otherwise specified in these special provisions.

PART 3 - EXECUTION

INSPECTION

Coatings shall not be applied until surface preparation has been approved by the Engineer. The Contractor shall notify the Engineer at least 3 working days prior to the application of coatings.

SURFACE PREPARATION

Surfaces scheduled to be coated shall be prepared in conformance with the coating manufacturer's printed instructions unless otherwise specified in these special provisions.

Hardware, cover plates, light fixture trim, and similar items shall be removed prior to preparing surfaces for coating. Following the application of the finish coating, the removed items shall be reinstalled in their original locations.

Galvanized Metal:

New surfaces shall be roughened by hand sanding or light abrasive blasting. Galvanizing shall not be removed during cleaning or roughening.

Damaged or corroded areas shall be cleaned and given 2 spot applications of a coating that conforms to the requirements in the Detailed Performance Standards of the MPI, and listed on MPI List "Number 18, Primer, Zinc Rich, Organic."

Steel and Other Ferrous Metals: Surface shall be cleaned in conformance with the requirements in SSPC-SP 1. Surface profile shall be as required for the coating system specified.

APPLICATION

Coatings shall be applied in conformance with the printed instructions and at the application rates recommended by the manufacturer to achieve the dry film thickness stated in the coating technical data sheet.

Mixing, thinning and tinting shall conform to the manufacturer's printed instructions. After thinning, the coating shall conform to the regulatory requirements in these special provisions.

Coatings shall be applied only when surfaces are dry and properly prepared.

Cleaning and painting shall be scheduled so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

Surface Finish Application:

Each coat shall be applied to a uniform finish. Finished surfaces shall be free of surface deviations and imperfections such as skips, cloudiness, spotting, holidays, laps, brush marks, runs, sags, curtains, ropiness, improper cutting in, overspray, drips, ridges, waves, and variations in color and texture.

Each application of a multiple application finish system shall closely resemble the final color coat, except each application shall provide enough contrast in shade to distinguish the separate applications.

Work Required Between Applications:

Each application of material shall be cured in conformance with the coating manufacturer's printed instructions before applying the succeeding coating.

Enamels and clear finishes shall be lightly sanded, dusted, and wiped clean between applications.

Timing of Applications: The first application of the coating system shall be during the same work shift that the final surface preparation was performed. Additional coats shall be applied as soon as the required drying time of the preceding coat, specified in the coating manufacturer's printed instructions, has been met.

Application Methods:

Coatings shall be applied by brush, roller or spray. Rollers shall be of a type which do not leave a stippled texture in the paint film. Extension handles for rollers shall not be greater than 1.8 meters in length.

If spray methods are used, surface deviations and imperfections such as overspray, thickness deviations, lap marks, and orange peel shall be considered as evidence the work is unsatisfactory and the Contractor shall apply the remainder of the coating by brush or roller, as approved by the Engineer.

CLEANING

Upon completion of all operations, the coated surfaces shall be thoroughly cleaned of dust, dirt, grease, or other unsightly materials or substances.

Surfaces marred or damaged as a result of the Contractor's operations shall be repaired, at his expense, to match the condition of the surfaces prior to the beginning of the Contractor's operations.

COATING SYSTEM

The surfaces to be coated shall be as shown on the plans and as specified in these special provisions. When a coating system is not shown or specified for a surface to be finish coated, the coating system to be used shall be as specified for the substrate material. The number of applications specified for each coating system listed herein is a minimum. Additional coats shall be applied if necessary to obtain a uniform color, texture, appearance, or required dry film thickness.

	MPI Gloss Level	Gloss at 60°
Flat	1	< 5
Eggshell	3	10-25
Semi-Gloss	5	35-70
Gloss	6	70-85

SYSTEM 1 - GALVANIZED METAL

2 Finish Coats:

Semi-Gloss: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 5, MPI List Number 163

COLOR SCHEDULE

Colors shall be as shown on the plans.

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04-0060A4

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
41	150722	REMOVE PAVEMENT MARKER	EA	13 200		
42	150742	REMOVE ROADSIDE SIGN	EA	25		
43	150760	REMOVE SIGN STRUCTURE	EA	4		
44	150761	REMOVE SIGN PANEL AND REMOVABLE SIGN PANEL FRAME	EA	5		
45	150763	REMOVE SIGN PANEL	EA	30		
46	150769	REMOVE ASPHALT CONCRETE	M3	22 100		
47	150771	REMOVE ASPHALT CONCRETE DIKE	M	2270		
48	150805	REMOVE CULVERT	M	260		
49	012500	REMOVE CORRUGATED METAL PIPE RISER	EA	1		
50	012501	REMOVE ROCK SLOPE PROTECTION	M3	35		
51	150820	REMOVE INLET	EA	21		
52	150821	REMOVE HEADWALL	EA	4		
53	150826	REMOVE MANHOLE	EA	1		
54	150846	REMOVE CONCRETE PAVEMENT	M2	1930		
55	150860	REMOVE BASE AND SURFACING	M3	8870		
56	150870	REMOVE CONCRETE DECK SURFACE	M2	12 070		
57	151272	SALVAGE METAL BEAM GUARD RAILING	M	110		
58	151274	SALVAGE CONCRETE BARRIER (TYPE K)	M	6620		
59	152372	RELOCATE CONCRETE BARRIER (TYPE K)	M	1260		
60	152390	RELOCATE ROADSIDE SIGN	EA	2		

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	152430	ADJUST INLET	EA	12		
62	152439	ADJUST FRAME AND GRATE TO GRADE	EA	1		
63 (S)	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	M2	21 200		
64	153210	REMOVE CONCRETE	M3	2		
65	153214	REMOVE CONCRETE CURB	M	38		
66	012502	REMOVE CONCRETE (LINED DITCH)	M3	11		
67	153221	REMOVE CONCRETE BARRIER	M	1330		
68	153225	PREPARE CONCRETE BRIDGE DECK SURFACE	M2	53 200		
69	155003	CAP INLET	EA	4		
70	157551	BRIDGE REMOVAL, LOCATION A	LS	LUMP SUM	LUMP SUM	
71	157552	BRIDGE REMOVAL, LOCATION B	LS	LUMP SUM	LUMP SUM	
72	157553	BRIDGE REMOVAL, LOCATION C	LS	LUMP SUM	LUMP SUM	
73	157561	BRIDGE REMOVAL (PORTION), LOCATION A	LS	LUMP SUM	LUMP SUM	
74	157562	BRIDGE REMOVAL (PORTION), LOCATION B	LS	LUMP SUM	LUMP SUM	
75	041127	BRIDGE REMOVAL (PORTION), TRAVELER RAIL	LS	LUMP SUM	LUMP SUM	
76	158100	SALVAGE CRASH CUSHION	EA	8		
77	159101	RAISE BRIDGE	LS	LUMP SUM	LUMP SUM	
78	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
79	190101	ROADWAY EXCAVATION	M3	44 900		
80	012503	ROADWAY EXCAVATION (CLASS II)	M3	16 000		

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101	270001	CEMENT TREATED BASE (ROAD-MIXED, CLASS A)	M3	2170		
102	290201	ASPHALT TREATED PERMEABLE BASE	M3	1070		
103	374002	ASPHALTIC EMULSION (FOG SEAL COAT)	TONN	2		
104	390102	ASPHALT CONCRETE (TYPE A)	TONN	40 200		
105	390106	ASPHALT CONCRETE (OPEN GRADED)	TONN	1280		
106	390126	RUBBERIZED ASPHALT CONCRETE (TYPE G)	TONN	1190		
107	393001	PAVEMENT REINFORCING FABRIC	M2	10 100		
108	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	M2	600		
109	394040	PLACE ASPHALT CONCRETE DIKE (TYPE A)	M	1470		
110	394044	PLACE ASPHALT CONCRETE DIKE (TYPE C)	M	19		
111	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	M	520		
112	395000	LIQUID ASPHALT (PRIME COAT)	TONN	21		
113	397001	ASPHALTIC EMULSION (PAINT BINDER)	TONN	18		
114	415101	CRACK EXISTING CONCRETE PAVEMENT	M2	9210		
115 (F)	510053	STRUCTURAL CONCRETE, BRIDGE	M3	335		
116 (F)	511001	LIGHTWEIGHT CONCRETE	M3	1150		
117	510060	STRUCTURAL CONCRETE, RETAINING WALL	M3	310		
118 (F)	510087	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	M3	125		
119 (F)	041128	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R MODIFIED)	M3	45		
120 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	120		

REVISED PER ADDENDUM NO. 2 DATED OCTOBER 19, 2007

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
121	510526	MINOR CONCRETE (BACKFILL)	M3	8		
122	510800	PAVING NOTCH EXTENSION	M3	3		
123	511106	DRILL AND BOND DOWEL	M	62		
124	041129	EPOXY MORTAR	M3	1		
125	511118	CLEAN EXPANSION JOINT	M	555		
126	041130	ELASTOMERIC CONCRETE	M3	0.3		
127	515041	FURNISH POLYESTER CONCRETE OVERLAY	M3	1240		
128 (F)	515042	PLACE POLYESTER CONCRETE OVERLAY	M2	53 200		
129 (S)	515072	CORE CONCRETE (0 - 50 MM)	M	44		
130 (S)	515073	CORE CONCRETE (51 MM - 100 MM)	M	94		
131 (S)	041131	CORE CONCRETE (51 MM-100 MM) AND BOND ANCHOR BOLT	M	26		
132 (S)	519102	JOINT SEAL (TYPE AL)	M	262		
133 (S)	519117	JOINT SEAL (MR 30 MM)	M	270		
134 (S)	519120	JOINT SEAL (MR 15 MM)	M	1580		
135 (S)	519142	JOINT SEAL (MR 40 MM)	M	245		
136 (S-F)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	226 300		
137 (S-F)	520103	BAR REINFORCING STEEL (RETAINING WALL)	KG	11 253		
138 (S-F)	520110	BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	KG	9700		
139 (S-F)	520120	HEADED BAR REINFORCEMENT	EA	2780		
140 (S-F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	KG	66 300		

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
141 (S-F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	KG	66 300		
142 (S-F)	041132	STRUCTURAL STEEL (TRAVELER RAIL)	KG	25 100		
143 (S-F)	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	10 130		
144 (S-F)	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	10 130		
145 (S)	560233	FURNISH FORMED PANEL SIGN (OVERHEAD)	M2	15		
146 (S)	560238	FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-UNFRAMED)	M2	5		
147 (S)	560239	FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-UNFRAMED)	M2	30		
148 (S)	561015	1524 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	8		
149	566011	ROADSIDE SIGN - ONE POST	EA	42		
150	566012	ROADSIDE SIGN - TWO POST	EA	2		
151	568007	INSTALL SIGN OVERLAY	M2	1.1		
152 (S)	590115	CLEAN AND PAINT STRUCTURAL STEEL	LS	LUMP SUM	LUMP SUM	
153 (S)	041133	CLEAN AND PAINT STRUCTURAL STEEL (TRAVELER RAIL)	LS	LUMP SUM	LUMP SUM	
154 (S)	590135	SPOT BLAST CLEAN AND PAINT UNDERCOAT	M2	1020		
155	620910	450 MM ALTERNATIVE PIPE CULVERT (TYPE A)	M	440		
156	620911	450 MM ALTERNATIVE PIPE CULVERT (TYPE B)	M	480		
157	620913	600 MM ALTERNATIVE PIPE CULVERT	M	230		
158	650067	300 MM REINFORCED CONCRETE PIPE	M	16		
159	650069	450 MM REINFORCED CONCRETE PIPE	M	1		
160	650365	450 MM REINFORCED CONCRETE PIPE (CLASS III)	M	11		

ENGINEER'S ESTIMATE
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161	680272	100 MM PLASTIC PIPE UNDERDRAIN	M	40		
162	681134	80 MM PLASTIC PIPE (EDGE DRAIN)	M	290		
163	681137	80 MM PLASTIC PIPE (EDGE DRAIN OUTLET)	M	110		
164	682008	PERMEABLE MATERIAL (BLANKET)	M3	2960		
165	690159	300 MM CORRUGATED STEEL PIPE DOWNDRAIN (1.63 MM THICK)	M	24		
166	705220	300 MM CONCRETE FLARED END SECTION	EA	1		
167	705222	450 MM CONCRETE FLARED END SECTION	EA	1		
168	705336	450 MM ALTERNATIVE FLARED END SECTION	EA	1		
169	721011	ROCK SLOPE PROTECTION (BACKING NO. 2, METHOD B)	M3	3		
170	731501	MINOR CONCRETE (CURB)	M3	110		
171	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	M3	40		
172	012507	MINOR CONCRETE (COLOR PAVING)	M3	40		
173 (S-F)	750001	MISCELLANEOUS IRON AND STEEL	KG	7020		
174 (S-F)	750496	MISCELLANEOUS METAL (RESTRAINER - PIPE TYPE)	KG	230		
175 (S-F)	750498	MISCELLANEOUS METAL (RESTRAINER - CABLE TYPE)	KG	1650		
176 (S-F)	750500	MISCELLANEOUS METAL	KG	240		
177 (S-F)	750501	MISCELLANEOUS METAL (BRIDGE)	KG	22 340		
178 (S)	800382	CHAIN LINK FENCE (TYPE CL-0.9, VINYL-CLAD)	M	870		
179 (S)	800385	CHAIN LINK FENCE (TYPE CL-1.2)	M	360		
180 (S)	800389	CHAIN LINK FENCE (TYPE CL-1.5)	M	1330		

REVISED PER ADDENDUM NO. 2 DATED OCTOBER 19, 2007

ENGINEER'S ESTIMATE
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
221 (S)	012514	LIGHTING AND SIGN ILLUMINATION (STAGE CONSTRUCTION)	LS	LUMP SUM	LUMP SUM	
222	860797	ELECTRIC SERVICE (IRRIGATION)	LS	LUMP SUM	LUMP SUM	
223 (S)	012515	RELOCATION OF ELECTRICAL CONTROLS AND RACON	LS	LUMP SUM	LUMP SUM	
224 (S)	861502	MODIFY SIGNAL	LS	LUMP SUM	LUMP SUM	
225 (S)	012516	TRAFFIC OPERATIONS SYSTEM (SOUTH APPROACH)	LS	LUMP SUM	LUMP SUM	
226 (S)	012517	TRAFFIC OPERATIONS SYSTEM (NORTH APPROACH)	LS	LUMP SUM	LUMP SUM	
227 (S)	012518	TRAFFIC OPERATIONS SYSTEM (MAIN BRIDGE SPAN)	LS	LUMP SUM	LUMP SUM	
228 (S)	012519	CAMERA STATION	EA	4		
229 (S)	994650	BUILDING WORK	LS	LUMP SUM	LUMP SUM	
230	BLANK					
231	012735	TEMPORARY RAILROAD CROSSING	LS	LUMP SUM	LUMP SUM	
232	012736	5.0M TEMPORARY CHAIN LINK GATE (TYPE CL-1.8)	EA	1		
233	071322	TEMPORARY FENCE (TYPE CL-1.8)	M	190		
234	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	